

CLAIMS

- 1) (cancelled) ~~A timing system comprising a base station with means of providing settings and a separate piece with autonomous means to implement these settings when disconnected from the base station.~~
- 2) (cancelled) ~~The device in claim 1, wherein the time reference in said autonomous piece is reset when settings are changed before said piece is removed from the base station, so that time accuracy must be maintained only over a single setting.~~
- 3) (cancelled) ~~The device in claim 1 where used as the timing function initiates an alarm.~~
- 4) (cancelled) ~~Said alarm in claim 3 wherein the autonomous part produces an audible alarm and sits near the users ear.~~
- 5) (cancelled) ~~Said alarm system in claim 4 wherein the autonomous part sits substantially in within the users ear.~~
- 6) (cancelled) ~~The device in claim 5 where the settings include designation of time for an alarm event.~~
- 7) (cancelled) ~~The device in claim 6 where used as an alarm clock.~~

(8) (new) An ear-plug alarm system, including by this reference any generalized time triggering system, comprising:

(A) a base-station or setting device further comprising:

(a) a master time reference,

(b) user controls for designating alarms events or setting alarm times, possibly including a display and buttons or connection to other remote input means,

(B) one or more ear-pieces, including by this reference any autonomous timing elements, further comprising:

(a) a local time reference separate from said base-station master time reference,

(b) storage means for holding settings from the base-station including without limitation alarm designations for the autonomous timing and alarm function,

(c) a controller for determining when said alarm time is reached based upon said local time reference and the stored setting,

(d) a power source, possibly rechargeable form the base-station, whereby the logic is powered for autonomous operation after disconnection from the base-station, and

(e) one or more interfaces to initiate responses at said alarm event, possibly including but not limited to drivers for an audio alarm or sounder in the ear-piece,

whereby the ear-piece is entirely autonomous once set and able to operate without further support from or connection to said base-station,

(C) means of directly connecting any one of said ear-pieces to said base-station, including without limitation electrical, electro-magnetic, radio-frequency, optical, or other interface such that:

(a) the presence of this connection implicitly selects the particular ear-piece to be set among multiple ear-pieces in near proximity, whereby a single setting device can unambiguously control multiple ear-pieces, setting them one at a time, without separate addressing or selection,

(b) the connection provides a means of transferring settings from said base-station to said ear-piece,

where a single base-station may include a plurality of such connections.

(9) (new) The ear-plug alarm system of claim 8 wherein the means of connecting the base-station to the ear-piece selects the ear-piece via these two pieces being substantively in physical contact, including without limitation when said means comprises an electro-magnetic coupling.

- (10) (new) The ear-plug alarm system of claim 8 wherein the means of connecting the base-station to the ear-piece comprises a direct physical connection, including without limitation an electrical connector.
- (11) (new) The ear-plug alarm system with direct physical connection of claim 10 when configured as an alarm clock wherein means are provided for the resulting time trigger to initiate an alarm to the user, including but not limited to audio alarm signals.
- (12) (new) The two-piece alarm clock of claim 11 wherein said ear-piece sits near the users ear when in use after being set, and includes means to generate a tactile or audio alarm at the specified time.
- (13) (new) The near-ear ear-plug alarm of claim 12 where said ear-piece sits substantially within the user's ear.
- (14) (new) The ear-plug alarm of claim 8 wherein:
- (A) the ear-piece includes memory to retain settings after the alarm event has occurred,

(B) the connecting means includes means of communicating said settings from the ear-piece to the base station before setting the next alarm event,

(C) the base-station controller includes means of presenting said settings to the user as an initial default for the new alarm setting,

whereby each ear-piece acts like a separate alarm clock with it's user's preferred wake-up time being retained from one day to the next, even when multiple users share the same base-station.

(15) (new) The ear-plug alarm with setting memory of claim 14 wherein:

(A) the device is configured specifically as an ear-plug alarm,

(B) the means of connecting the base-station to the ear-piece comprises a contact or inductive electrical connection,

(C) the ear-piece sits near or substantially within the users ear when in use after setting,

(D) the ear-piece includes mans of producing an audible or tactile alarm at the specified event time.

(16) (new) The ear-plug alarm system of claim 8 wherein:

(A) said local time reference in said ear-piece may be implicitly reset from said base station master time reference,

(B) the alarm event is designated relative to this reset reference, including without limitation where the alarm event is designated as a delay from a time mark established via said connecting means during setting,

whereby drift in the local time reference does not accumulate between settings, thus enabling the use of less expensive timing references such as the local oscillator in a commercial micro-processor.

17) (new) The ear-plug alarm with implicit time reset of claim 16 wherein the information communicated from the ear-piece to the base station includes a predetermined local time reference drift-calibration which is used to pre-compensate alarm event settings, whereby ear-piece time references with even less absolute accuracy may provide the same alarm event accuracy.

18) (new) The ear-plug alarm system of claim 17 wherein:

(A) the device is configured specifically as an ear-plug alarm,

(B) the means of connecting the base-station to the ear-piece comprises a contact or inductive electrical connection,

(C) the ear-piece sits near or substantially within the users ear after setting during operation.

(D) the ear-piece includes means of producing an audible or tactile alarm at the specified event time.